

Electrode materials having increased surface conductivity

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Abstract

An electrode material, comprising complex oxide particles with a homogeneous conductive carbon-based material coating, is ne An electrode material, comprising a complex oxide of formula $AaMmZzOoNnFf$, in which A = an alkali metal, M = one or more transition metals and optionally a non-transition metal, Z = one or more non-metal and a, m, z, o, n and f are 0 and are chosen to provide electrical neutrality, has a homogeneous conductive carbon-based material coating to provide a regular electric field distribution at the material grain surfaces. Independent claims are also included for the following: (i) a process for carbon-based material deposition on the above electrode material by pyrolysis of a polymer (mixture), dispersed in the complex oxide, in vacuum or an inert gas atmosphere; (ii) a process for carbon-based material deposition on the above electrode material by dismutation of carbon-based material monoxide, optionally mixed with an inert gas, below 900 degrees C optionally in the presence of a catalyst; (iii) a process for preparing the above electrode material by pyrolysis of an organic derivative of an alkali metal (A) to form a carbon-based material deposit on the complex oxide surface a to supply a portion of the alkali metal content of the complex oxide; and (iv) an electrochemical cell having one or more electrodes of the above electrode material.

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